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ABSTRACT

Summer Tech '84 was the product of a joint venture of the College of Education of Ohio State University and the Columbus Ohio Public Schools to provide instruction on the use of microcomputers to citizens of the Columbus metropolitan area. For four weeks, 80 different 10-hour classes were offered in eight areas: introductory computer literacy, bring your own computer, programming, business use of microcomputers, educational use, microcomputer use in the arts, extending human capabilities, and advanced computing. This paper describes the evaluation of Summer Tech '84 by its participants, who ranged in age from 4 to 78. The evaluation also measures skills exhibited by students in a specific course, Programming in BASIC I. Six data tables display the following summaries: participants' demographic statistics; responses to attitude questions; means by which students learned about the program; additional courses requested; statistical summaries of the results of the test for Programming in BASIC I and student responses to items on the test. Recommendations for revising the program when it is repeated in the summer of 1985 are provided. (JB)

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Evaluating Microcomputer Courses in a Non-Traditional Setting

Paper Presented at AERA Meeting, April 1985

by

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Program Description

Summer Tech '84 was a joint venture of the College of Education of The Ohio State University and The Columbus Ohio Public Schools to provide instruction on the use of microcomputers to citizens of the Columbus metropolitan area. For four weeks from July 9 to August 3, classes consisting of ten hours of instruction were offered in 80 different courses. The 80 courses were classified into eight broad areas - introductory, bring your own computer, programming, in the office, in education, in the arts, extending human capabilities, and advanced courses. Classes began at half past each hour from 7:30 a.m. until 7:30 p.m., Monday through Friday. In all, 5,584 registrations were processed for the classes offered. Classes were held at the Fort Hayes Career Center in the downtown area and utilized primarily Apple //e microcomputers and related software purchased with district funds or donated by the business community. Upon completion of the Summer Tech '84 program, newly purchased microcomputers were installed in laboratories in 26 middle schools while older equipment was returned to microcomputer laboratories at high schools.

The program was planned by a joint Computers in the Schools (CITS) committee composed of faculty of the College of Education and staff of the Columbus Public Schools. The committee met every Thursday during the 1983-84 school year and dealt with the planning of Summer Tech '84 and long and short range planning for microcomputer education in the district.

Evaluation Design

The general evaluation scheme was to collect a variety of data from multiple sources, so that the evaluation would reflect a wide range of information and viewpoints. Primarily, the evaluation was designed to use various modes to tap the attitudes, perspectives, and experiences of the participants. Secondarily, the evaluation dealt with skills exhibited by students in a specific course, Programming in Basic I. Two instruments were developed to collect the evaluation data. The first instrument, the Summer Tech '84 Class Survey, consisting of 18 items was completed at the conclusion of a course by all students with the exception of students enrolled in the "Computers for Kids" courses. The students in "Computers for Kids" were as young as four years of age and could not be expected to complete or understand the evaluation form.

Students in the Programming in Basic I course were requested to complete an eight item examination upon completion of the course. The examination consisted of four true-false and four completion items assessing skills taught in the course.

Data Analysis

Over the four week period of Summer Tech '84, 3346 students completed the Summer Tech '84 Class Survey. The demographic characteristics of the respondents are summarized in Table 1. The median age of respondents was 34.0. Surprising, female students outnumbered male students almost two to one, 61.4% to 38.6%.

Table 1

Summary of Demographic Statistics
of Respondents to the Summer Tech 84' Survey

Variable		Value
Age		
	median	34.0
	maximum	78
	minimum	4
	4 - 9	2.8%
	10 - 19	28.0%
	20 - 29	11.3%
	30 - 39	22.3%
	40 - 49	17.4%
	50 - 59	13.1%
	60 - 69	4.6%
	70 -	0.5%
Sex		
	Female	61.4%
	Male	38.6%
Highest Educational Level		
	Less than grade 5	3.3%
	Grade 5	8.1%
	Grade 8	14.9%
	Grade 12	9.8%
	Some college or technical school	16.4%
	College degree	17.5%
	Graduate work	30.0%

The first nine items of the Class Survey were Likert Scale items which assessed attitudes towards computers and the classes. Responses to the nine items are summarized in Table 2. In general, respondents agreed that the class gave them a better understanding of microcomputers, that they enjoyed the

Table 2

Summary of Responses to Attitude Items in the Summer Tech '84 Class Survey

Item	Percent Agree (1)	Percent Undecided (2)	Percent Disagree (3)	Average Response	N
1. This class gave me a better understanding of micro-computers.	91.1	6.3	2.6	1.1	3318
2. Before taking this course, I was afraid to use computers.	12.6	10.5	76.9	2.6	3313
3. Now, I am afraid to use computers.	2.8	3.3	93.9	2.9	3305
4. This class was well organized.	77.6	16.2	6.3	1.3	3288
5. I enjoyed this class.	90.0	8.1	1.8	1.1	3308
6. My teacher did a good job of answering my questions.	89.5	7.9	2.6	1.1	3301
7. The class was too difficult for me.	3.8	10.0	86.2	2.8	3291
8. I was able to complete my assignments in the time given.	76.2	12.3	11.5	1.4	3247
9. This class taught me skills I can use.	85.8	11.6	2.6	1.2	3290

Alpha coefficient = .44

class, that teachers did a good job of answering questions, that the class was not too difficult, and that the class taught them skills that they can use. The lowest ratings given suggest that the classes were not as well organized as they might be and that students were unable to complete the assignments in the time given. Further analysis of the data indicates that art, office, and advanced courses were rated as not being as well organized as classes in other areas and were rated as not allowing enough time to complete assignments.

There was an extensive campaign to make people aware of the Summer Tech '84 program including public service radio and TV spots, a full page advertisement donated by the local paper, articles in school system publications, and mailings to persons who enrolled in Summer Tech '83. One item of the survey was designed to determine how students learned about Summer Tech '84. Responses to the item are summarized in Table 3. The two most frequently mentioned sources of information on the Summer Tech '84 program, the school and the brochure, are under direct control of the school system. The fourth most frequently mentioned source, at work, can probably be affected by carefully supplying information to employers.

Table 3

Summary of How Students
Learned About Summer Tech '84

Source of Information	Percent	Number Indicating Sources
School	31.0	1036
Brochure	28.8	964
Friend	20.1	671
At work	19.4	648
Daily newspaper	19.0	635
TV	15.9	531
Other	13.6	456
Radio	11.0	368
Weekly newspaper	6.5	217

Of those responding to the Class Survey, 94.2% (2960) indicated that they would like to take more classes on microcomputers. Table 4 summarizes the types of courses respondents indicated that they would next like to take. Programming and word processing are the two most frequently chosen alternatives for a next class. This data will be used as a basis for preparing a master schedule of courses to be offered in 1985.

Table 4

Summary of Types of Addition Classes
in Which Respondents Would Like to Enroll

Area of Class	Percent	N
Programming language	55.6	1645
Word processing	39.8	1179
Classes for teachers	17.6	521
Business	14.9	441
Advanced course	12.1	359
Introductory course	9.8	290
Other course	9.4	279

Two other items were included in the Class Survey to help with planning for future years. Of those responding, 90.9% indicated that the location was convenient. Only 15% of the respondents indicated that they had also attended classes the previous summer as part of Summer Tech '84.

On the last day of class students in the Programming in Basic I course completed an eight item test consisting of four true-false and four completion items which assessed skills taught in the course. Table 5 provides the summary statistics for the test. The average raw score was 5.6 and the coefficient alpha reliability was .63.

Table 6 summarizes item data for the test. Based on item-total correlations items 2 and 3 may need to be revised or replaced. With the exception of item 3 dealing with the LET command, a majority of students were able to respond correctly to the items with the percent of correct responses on the seven remaining items ranging from 54.4% to 91.5%.

Table 5

Summary Statistics for the
Test for Programming in BASIC I

Description	Value
Mean score	5.60
Standard deviation	1.82
Alpha reliability	.63

Table 6

Summary of Student Responses to
Items on the Programming in BASIC I Test

Item Number	Item Type	Content Assessed by Item	Percent Correct Responses	Corrected Item-total Correlation
1	T-F	LIST command	91.5	.26
2	T-F	PR#6 command	69.1	.13
3	T-F	LET command	37.5	.09
4	T-F	Sequence of program execution	72.6	.39
5	Completion	Value of expression 3+5*2	54.4	.50
6	Completion	Value of expression 6 / (2+1)	79.2	.49
7	Completion	Value of expression 10 - 4/2	60.6	.56
8	Completion	Output from a program using PRINT	57.9	.29

Discussion

With modifications, the Summer Tech '84 program will be repeated during the summer of 1985. Based on the experience in 1984, I am considering the following changes in the evaluation design for 1985:

- Revise two items on the end of course examination for Programming in BASIC I.
- Expanding the use of end of course examinations as both an aid to students in a self assessment of their learning and as an assessment of the course.
- Include self appraisal items in the Class Survey to assess the extent to which participants perceive that they have achieved the objectives of the course.
- To include items in the Class Survey which will provide more information on why participants enroll in computer courses in general and why they chose a specific course.